Please check that this question paper contains_9_ questions and _2_ printed pages within first ten minutes.

[Total No. of Questions: 09] [Total No. of Pages: 2]

Uni. Roll No. …….

Program: B.Tech.
Semester: 4
Name of Subject: Analog Circuits
Subject Code: PCEC-106
Paper ID: 16222

22-01-2022(M)

Time Allowed: 02 Hours **Max. Marks: 60**

NOTE:

1) Each question is of 10 marks.
2) Attempt any six questions out of nine
3) Any missing data may be assumed appropriately
4) Scientific calculator is allowed.

Q1. Explain various types of coupling briefly.

Q2. Discuss the advantage of transformer coupled power amplifier over the direct coupled power amplifier. Also calculate the efficiency of transformer coupled power amplifier.

Q3. a) Explain the effects of negative feedback on amplifier characteristics.

b) An amplifier has a gain of 60 and distortion 10% without feedback. Determine (i) gain (ii) distortion, when negative feedback is applied, the feedback factor being 6.

Q4. Sketch the neat and clean diagram of Wien bridge oscillator to discuss its working and hence derive the expression for frequency of oscillation.

Q5. Explain the dc analysis of dual-input, balanced output differential amplifier.

Q6. Discuss the operation of triangular wave generator with mathematical derivation and output waveform.

Q7. a) Write a short note on Darlington amplifier.

b) A transformer coupled class A power amplifier supplies the power to a 100 Ω load. Determine the maximum power output for a zero- signal collector current of 80 mA if the transformer turn-ratio is 10:1.

Q8. a) Explain mathematically how nonlinear distortion reduces with negative feedback.

b) Determine the operating frequency of a Colpitt's oscillator if

$L = 50\ \mu H$, $L_{RFC} = 0.8\ mH$, $C_1 = 0.01\ \mu F$ and $C_2 = 0.02\ \mu F$, $C_C = 20\ \mu F$.

Q9. a) Briefly explain the current mirror circuit.

b) Write a short note on differentiator.

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